Date taken out.	For what purpose.			Initials of clerk taking the paper or of attender.	Date returned.	Initials of attender.
	Department.	C. No.	Year.			

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Local & Munl. (189 7) Department.

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G.O., No. 1793 m

DATED 17-8-97

DESPATCHED

[Despatch Abstract.]

Inspection note

Recording in the remarks, the Dy. Sanit
Comrs. — on the Cochin munl

BACK PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

FURTHER PAPERS.

G.O.	No.	Department.	Date.	G.O.	No.	Department.	Date.

Government {1897} of Madras.

LOCAL AND MUNICIPAL.

Recd. } 1897. *Enclosures*

Regd. *Spare copies*

G.O., No. 1793 M., 17th August 1897.

AUGUST.

Inspection Notes.

Recording, with remarks, the Deputy Sanitary Commissioner's — on the Cochin Municipality.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

Read—the following papers :—

Inspection Notes of the Inspector of Vaccination and Deputy Sanitary Commissioner for Madras.

MALABAR DISTRICT.

Cochin Municipality.

Inspected 24th and 25th September 1896.

Population as per census of { 1881 15,698
1891 17,601

Inspection Notes.	Chairman's Remarks.
Cochin is situated on a ridge of sand between the sea and a back-water, and is but little above sea level. The depth of sub-soil water varies from two to five feet. A town situated on such a site should exercise the very greatest care on conservancy so that the soil may be kept in a state of purity; otherwise it must pay the penalty of a high death-rate as is the case here.	Noted.
2. *Roads.*—The roads are in very fair order and clean. Many of the lanes are, however, used for purposes of nature. The attention of the police should be called to this.	Will call the attention of the police to this again.
3. *Dwellings.*—Some improvement has been effected in respect to overcrowding at Kalvetti by the removal of some houses near Messrs. Volkhart's works, but much still remains to be done in this direction. Many of the houses are built on land reclaimed from the swamp and are in consequence damp and unhealthy. Building in such situations should not be allowed in future until at least efficient sub-soil drainage is first arranged for.	No dwelling houses have been erected on the ground reclaimed by the municipality. The remarks evidently refer to reclamation made by private individuals. The suggestion will be attended to.
4. *Drainage.*—(*a*) There are the usual side channels to carry off rain water, but nothing beyond this has been done in the way of endeavouring to lower the level of the sub-soil water.	Noted.

Inspection Notes.	Chairman's Remarks.
(*b*) *Sewage Removal.*—In several streets attempts have been made to convey away the sewage by means of built drains, but so badly constructed and levelled are they that the contents of several never reach the outlet, but soak into the soil to the sure pollution of the water-supply. The old fort ditch and the Kalvetti swamp canal serve to receive most of the drainage of both British and Native Cochin, and as the upper reaches are very little affected by the tide, their condition is very offensive. It would be a great sanitary improvement if these stagnant canals could be filled up—in their upper reaches at any rate—and I would suggest that the opinion of an expert be obtained on this point.	A scheme for the improvement of the drains is still pending for want of funds to carry it out.
5. *Conservancy.*—(*a*) There are twenty square-shaped, iron dust-bins. These are emptied by means of three carts and twenty wheel-barrows. These latter do not appear to have been provided with wire frames as recommended by the Sanitary Commissioner last year, nor have any steps been taken to obtain an incinerator for the destruction of rubbish. The councillors might with advantage inspect the incinerator now almost completed in Calicut and invest in a similar one for their town.	The council will endeavour to carry out this suggestion. Wire frames on wheel-barrows do not prove serviceable when conveying earth, mud and débris, &c. It is intended to set up an incinerator, and the Civil Surgeon will be requested to select a spot.
(*b*) *Night-soil Conservancy.*—There are thirteen public latrines and two more are about to be erected in the dhobies' village. The latrine near the police lines is in very bad order and is evidently not large enough, as the ground around it was freely used also. This latrine requires to be opened up and enlarged; at present it is not properly ventilated. The latrines on the backwater are still in the same neglected state as referred to in last inspection notes, and the approach was so bad that it was with difficulty that I managed to reach them. This should be attended to at once. The total number of latrines is still too small. The two latrines over the Kalvetti canal have not yet been removed, though this was promised in last inspection notes. The night-soil is removed by means of two iron carts and five buckets on wheels (*a*) to the beach where it is buried, and (*b*) to the sea where it is discharged in mid-channel during the ebb of the tide. Nothing is realized by the sale of either rubbish or night-soil.	The improvements to the latrines will be carried out as early as possible. The two latrines over the canal have since been removed.

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present extent of the town conservancy and of any possible means of extending the service on the self-supporting system laid down by Government.

As the remark stands, the council is unable to see how this arrangement is objectionable.

6. *Water-supply.*—The water-supply question is in the same stage as before and nothing has been done to cover the wells as recommended by the Sanitary Commissioner in his last inspection notes. Unless this is done and the small tanks that are found in every paramba are done away with, it is manifest that "Cochin leg" will continue to afflict the people. I would suggest that some arrangements be made for a combined water-supply for the three towns of British and Native Cochin and Ernacolam from the hills behind the latter. If this is impracticable, then the only alternatives appear to be Surgeon-General Cornish's scheme of an underground reservoir to contain the rain water collected from the tiled roofs of the old Dutch houses, or the opening up of the abandoned artesian well. As pointed out by the Sanitary Commissioner, the former of these schemes is perfectly feasible and would insure a certain supply of water, as it appears that the monsoon has never been known to fail. The other plan proposed by the Sanitary Engineer is to construct a well 20 feet deep round the pipe of the artesian boring, which, being cut off at that depth, would deliver the water with a head of that height, as the water now stands in the pipe at the level of the ground. From this well the water could be delivered by pumping into a cistern from which the people could draw by means of taps. The only thing against this is that the water has been pronounced bad by the Chemical Examiner; it might, however, be worth while to try the effect of pumping for a time and to have another analysis after this on the chance that the water is probably a great deal better than any now obtainable in Cochin, and that it is at any

No material improvement can be expected in the direction unless the Government is prepared to help the municipality with the necessary funds in the way of loan or gift.

Inspection Notes.

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The well near the police lines is in a very bad state; it should be lined with cement, it should be covered and supplied with a pump, and have a platform made round it to prevent percolation direct into it as at present. Those who can afford to pay for water are supplied by boat from the Alwaye river. The details of this are left largely to the boatmen, so that it is extremely doubtful if the water supplied really comes from the appointed spot. On arrival at Cochin the barrels are thrown overboard and floated ashore. It is evident that in this way the water cannot be so pure as it might be, and I should advise that some check be placed on the boatmen so as to ensure that they really go to the best place for their supply, and that on arrival the barrels of water be not thrown into the backwater but brought alongside so that their contents may be pumped direct into an iron tank from which the customers might draw their supply.

Chairman's Remarks.

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All these suggestions will be attended to.

7. *Markets.*—(*a*) A new fish market is being made at Kalvetti; when this is finished, the old one will be closed.

These suggestions will be carried out.

(*b*) Amaravati fish market consists of a central shed with earthen floor. The sellers sit outside this and sell their fish on filthy mats. The shed should be cemented and the fish exposed on slab tables or cemented platforms; a good water-supply is also requisite.

These suggestions will be carried out.

(*c*) Town fish market is a square shed with laterite jelly floor; there is no drainage nor facilities for washing.

These suggestions will be carried out.

(*d*) The beef bazaar is a row of godowns with laterite floors and having a thatched verandah in front. The meat is sold on wooden tables; slabs of polished stone ought to be substituted.

The floor will be cemented.

(*e*) A new mutton market has been built since last inspection. It has a cemented floor, but seems to be too small for its purpose. In a small town like Cochin one central market ought to be erected, as it would meet the wants of all and be more easy to supervise than the scattered ones at present existing.

The improvements suggested will be considered after the water-supply and drainage difficulties are surmounted.

8. *Slaughter-houses.*—There are seven private slaughter places—for they can hardly be called houses—all in a most

Inspection Notes.

undesirable state. As, however, a new municipal slaughter-house is to be built this year, there is no need to describe them.

9. *Graveyards.*—There are nine burial-grounds within municipal limits. The Mappilla ground is in a very bad state, overgrown with vegetation and in a crowded locality. It should be closed and a new one provided near the beach south of the town.

10. *Vaccination.*—Of 95 children examined in the schools, 77 were found to be protected, 12 had suffered from small-pox, and 6 were unprotected. One first-class vaccinator, K. Manivakku, on Rs. 15, is employed. The following shows the results obtained for the last five years :—

Chairman's Remarks.

This matter will be considered at an early date. The difficulty is to find a suitable piece of ground for a new cemetery.

—	1892.	1893.	1894.	1895.	1896 up to end of September.
Number vaccinated	1,651	1,108	1,260	1,168	906
,, ,, successfully	1,514	1,050	1,186	1,033	789
,, ,, under one year	216	188	279	384	302
,, verified by inspecting officer	160	144	105	80	83
Births	559	573	605	655	* 459

* Up to end of August 1896.

It will be seen that very few of the cases are inspected. I verified 21 cases from the register and found 15 successful, 3 unsuccessful and 3 absent. The lymph is got from Madras and, as might be expected, is prone to deteriorate in transit, giving a large number of unsuccessful insertions. Cochin is notorious as being the municipality showing the highest death-rate from small-pox in the Presidency during the last ten years—*vide* diagram in Report on Vaccination for 1895–96.

The following shows the result of the working of G.O., No. 1502 M., dated 19th October 1894 :—

The vaccination work has since been placed under the direct supervision and control of the Civil Surgeon, and it is hoped that satisfactory results will follow.

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Number died.	Number left the town.	Number unaccounted for.	Ratio per cent. of successful vaccinations to total births.
	Successfully in the first instance.	Unsuccessfully in the first instance.	Successfully.	Unsuccessfully.					
365	128	5	13	1	31	66	84	37	38·6

11. *Registration.*—One registrar on Rs. 17–8–0 is employed. The books are kept in English. The sanitary inspectors bring information. People do not readily

Inspection Notes.

come to the office to give information; they might now be prosecuted for this. No prosecutions for failure to register have been instituted during the year. The following shows results obtained :—

Chairman's Remarks.

Noted.

—	1892.	1893.	1894.	1895.	1896 up to end of August.
Deaths from—					
Cholera	27	60	226	16	169
Small-pox	325	29	11	1	2
Fevers	47	59	57	69	48
Dysentery and diarrhœa	88	68	55	30	25
Other causes	363	291	333	348	239
Total	850	507	682	464	483
Death-rate per mille	48·3	28·8	38·7	26·4	41·1
Births	559	573	605	655	459
Birth-rate per mille	31·8	32·5	34·4	37·2	39·1

Fort St. George, 16*th November* 1896. (Signed) W. B. BANNERMAN, Surgn.-Major, *Inspr. of Vaccn. & Dy. Sany. Commr., Madras.*

—

No. 2254-S.

Forwarded to the Chairman, Municipal Council, Cochin (through the Collector of Malabar).

2. The Deputy Sanitary Commissioner calls attention to the suggestion of the Sanitary Engineer as to the future disposal of the artesian boring. Undersigned would strongly urge its acceptance by the council. He also believes that it would be advisable for the council to take advantage of the permission accorded by Government to the effect that the council might continue the boring, did they so elect, at their own expense. As borings go, this is still of a very trivial depth, and although, as is not uncommon, all did not go smoothly during work, there is no reason with the experience gained that another hundred or more feet should not be sunk without much trouble. Thers is nothing to be alarmed at in the Chemical Examiner's analysis. That officer is bound, in accordance with the phraseology of the laboratory, to state that such and such water is "suspicious" or "bad" if it have above a definite amount of free ammonia, but, as he points out in his remarks, free ammonia to what would otherwise be an alarming amount is common enough with artesian waters. It is only by a sanitary survey that the actual facts of the case can be determined, and no reason against the water has been ascertained under this head. One of the most common causes of free ammonia in artesian waters is the action of the ferruginous soil upon nitrates or by the tube-lining. The Deputy Sanitary Commissioner's suggestion as to pumping would in all probability settle the question as to the effect of the lining or whether the more permanent cause of ferruginous soil be the reason. The people of Cochin may drink the artesian well water with the assurance that no harm would result.

3. Undersigned can but view with regret the report that, notwithstanding the facts as to causation of elephantiasis were explained to the council ten years back, no effort to meet the simple requirement of using water protected by any of the expedients suggested had been adopted.

Fort St. George, 2*nd December* 1896. (Signed) W. G. KING, Surgeon-Major, *Sanitary Commissioner for Madras.*

Endt. on Cur. No. 382-M.

Forwarded to the Chairman, Municipal Council, Cochin.

CALICUT,
14*th December* 1896. (Signed) G. W. DANCE,
Ag. Collector.

From M.R.Ry. M. SRINIVASA RAO Avargal, Chairman, Municipal Conncil, Cochin, to the Secretary to Government, Local and Municipal Department (through the Revenue Divisional officer), dated 9th April 1897, No. 84.

I have the honour to forward the Sanitary Commissioner's notes of his late inspection of the Cochin Municipality, with remarks thereon, which have been approved of by the council at its meeting held on the 6th ultimo.

Cur. No. 154-M.

Submitted.

10*th April* 1897. (Signed) M. SRINIVASA ROW,
Chairman.

Endt. on Cur. No. 154-M.

Forwarded.

CALICUT,
22*nd April* 1897. (Signed) H. O'D. HARDING,
Ag. Collector.

ORDER—No. 1793 M., dated 17th August 1897.

Recorded with the following remarks :—

(1) In the present state of the Provincial finances, the Government is unable to promise any help for improving the drainage and water-supply of the town.

(2) As regards the improvement of the water-supply, the attention of the municipal council is drawn to the remarks of the Sanitary Commissioner in paragraphs 2 and 3 of his endorsement.

(3) The special report regarding the extension of the private scavenging service, promised by the Chairman, will be awaited.

(4) The Sanitary Commissioner's attention is drawn to the council's remark on the latter portion of paragraph 5 (*c*) of the inspection notes.

(5) The council's decision in the matter of closing the objectionable Mappila burial-ground should be reported to Government.

(True Extract.)

G. S. FORBES,
Secretary to Government.

To the Chairman, Municipal Council, Cochin.
" Collector of Malabar.
" Sanitary Board.
" Sanitary Commissioner.
" Sanitary Engineer.

Exd. A. Raitt.

Government {1897} of Madras.

LOCAL AND MUNICIPAL.

Proof for approval

Recd. } 1897. *Enclosures*
Regd. } *Spare copies*

G.O., No. 1793 M., 17th August 1897.

AUGUST.

Inspection Notes.

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Inspection Notes.	Chairman's Remarks.
Cochin is situated on a ridge of sand between the sea and a back-water, and is but little above sea level. The depth of sub-soil water varies from two to five feet. A town situated on such a site should exercise the very greatest care on conservancy so that the soil may be kept in a state of purity; otherwise it must pay the penalty of a high death-rate as is the case here.	Noted.
2. *Roads.*—The roads are in very fair order and clean. Many of the lanes are, however, used for purposes of nature. The attention of the police should be called to this.	Will call the attention of the police to this again.
3. *Dwellings.*—Some improvement has been effected in respect to overcrowding at Kalvetti by the removal of some houses near Messrs. Volkhart's works, but much still remains to be done in this direction. Many of the houses are built on land reclaimed from the swamp and are in consequence damp and unhealthy. Building in such situations should not be allowed in future until at least efficient sub-soil drainage is first arranged for.	No dwelling houses have been erected on the ground reclaimed by the municipality. The remarks evidently refer to reclamation made by private individuals. The suggestion will be attended to.
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5. *Conservancy.*—(*a*) There are twenty square-shaped, iron dust-bins. These are emptied by means of three carts and twenty wheel-barrows. These latter do not appear to have been provided with wire frames as recommended by the Sanitary Commissioner last year, nor have any steps been taken to obtain an incinerator for the destruction of rubbish. The councillors might with advantage inspect the incinerator now almost completed in Calicut and invest in a similar one for their town.	The council will endeavour to carry out this suggestion.
(*b*) *Night-soil Conservancy.*—There are thirteen public latrines and two more are about to be erected in the dhobies' village. The latrine near the police lines is in very bad order and is evidently not large enough, as the ground around it was freely used also. This latrine requires to be opened up and enlarged; at present it is not properly ventilated. The latrines on the backwater are still in the same neglected state as referred to in last inspection notes, and the approach was so bad that it was with difficulty that I managed to reach them. This should be attended to at once. The total number of latrines is still too small. The two latrines over the Kalvetti canal have not yet been removed, though this was promised in last inspection notes. The night-soil is removed by means of two iron carts and five buckets on wheels (*a*) to the beach where it is buried, and (*b*) to the sea where it is discharged in mid-channel during the ebb of the tide. Nothing is realized by the sale of either rubbish or night-soil.	Wire frames on wheel-barrows do not prove serviceable when conveying earth, mud and débris, &c. It is intended to set up an incinerator, and the Civil Surgeon will be requested to select a spot. The improvements to the latrines will be carried out as early as possible. The two latrines over the canal have since been removed.

Inspection Notes.

(c) *Private Scavenging.*—The number of privies cleaned by the municipality has risen from 277 to 280 since last inspection. I would suggest that a sanitary census be taken and a report submitted of how many backyards and parambas are used for purposes of nature, for it is impossible to believe that out of 2,570 houses only 280 require the attention of the scavengers. In last notes it was remarked that "this will be attended to," but nothing appears to have resulted. The type of private latrine used by many in the parambas is a very poor affair, consisting of a kerosine-oil tin with a board laid across it.

6. *Water-supply.*—The water-supply question is in the same stage as before and nothing has been done to cover the wells as recommended by the Sanitary Commissioner in his last inspection notes. Unless this is done and the small tanks that are found in every paramba are done away with, it is manifest that "Cochin leg" will continue to afflict the people. I would suggest that some arrangements be made for a combined water-supply for the three towns of British and Native Cochin and Ernacolam from the hills behind the latter. If this is impracticable, then the only alternatives appear to be Surgeon-General Cornish's scheme of an underground reservoir to contain the rain water collected from the tiled roofs of the old Dutch houses, or the opening up of the abandoned artesian well. As pointed out by the Sanitary Commissioner, the former of these schemes is perfectly feasible and would insure a certain supply of water, as it appears that the monsoon has never been known to fail. The other plan proposed by the Sanitary Engineer is to construct a well 20 feet deep round the pipe of the artesian boring, which, being cut off at that depth, would deliver the water with a head of that height, as the water now stands in the pipe at the level of the ground. From this well the water could be delivered by pumping into a cistern from which the people could draw by means of taps. The only thing against this is that the water has been pronounced bad by the Chemical Examiner; it might, however, be worth while to try the effect of pumping for a time and to have another analysis after this on the chance that the water is probably a great deal better than any now obtainable in Cochin, and that it is at any

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A special report will be submitted on the present extent of the town conservancy and of any possible means of extending the service on the self-supporting system laid down by Government.

As the remark stands, the council is unable to see how this arrangement is objectionable.

No material improvement can be expected in the direction unless the Government is prepared to help the municipality with the necessary funds in the way of loan or gift.

Inspection Notes.

rate free from the chance of contamination by mosquitoes—*vide* last inspection notes, paragraph 5 (*e*), for connection of mosquitoes with Cochin leg.

The well near the police lines is in a very bad state; it should be lined with cement, it should be covered and supplied with a pump, and have a platform made round it to prevent percolation direct into it as at present. Those who can afford to pay for water are supplied by boat from the Alwaye river. The details of this are left largely to the boatmen, so that it is extremely doubtful if the water supplied really comes from the appointed spot. On arrival at Cochin the barrels are thrown overboard and floated ashore. It is evident that in this way the water cannot be so pure as it might be, and I should advise that some check be placed on the boatmen so as to ensure that they really go to the best place for their supply, and that on arrival the barrels of water be not thrown into the backwater but brought alongside so that their contents may be pumped direct into an iron tank from which the customers might draw their supply.

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The well will be cemented as suggested.

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The following shows the result of the working of G.O., No. 1502 M., dated 19th October 1894 :—

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Number died.	Number left the town.	Number unaccounted for.	Ratio per cent. of successful vaccinations to total births.
	Successfully in the first instance.	Unsuccessfully in the first instance.	Successfully.	Unsuccessfully.					
365	128	5	13	1	31	66	84	37	38·6

11. *Registration.*—One registrar on Rs. 17-8-0 is employed. The books are kept in English. The sanitary inspectors bring information. People do not readily

The vaccination work has since been placed under the direct supervision and control of the Civil Surgeon, and it is hoped that satisfactory results will follow.

Inspection Notes.

come to the office to give information; they might now be prosecuted for this. No prosecutions for failure to register have been instituted during the year. The following shows results obtained :—

Chairman's Remarks.

Noted.

—	1892.	1893.	1894.	1895.	1896 up to end of August.
Deaths from—					
Cholera	27	60	226	16	169
Small-pox	325	29	11	1	2
Fevers	47	59	57	69	48
Dysentery and diarrhœa	88	68	55	30	25
Other causes	363	291	333	348	239
Total	850	507	682	464	483
Death-rate per mille	48 3	28·8	38·7	26·4	41·1
Births	559	573	605	655	459
Birth-rate per mille	31·8	32·5	34·4	37·2	39·1

FORT ST. GEORGE,
16*th November* 1896.

(Signed) W. B. BANNERMAN, Surgn.-Major,
Inspr. of Vacen. & Dy. Sany. Commr., Madras.

No. 2254-S.

Forwarded to the Chairman, Municipal Council, Cochin (through the Collector of Malabar).

2. The Deputy Sanitary Commissioner calls attention to the suggestion of the Sanitary Engineer as to the future disposal of the artesian boring. Undersigned would strongly urge its acceptance by the council. He also believes that it would be advisable for the council to take advantage of the permission accorded by Government to the effect that the council might continue the boring, did they so elect, at their own expense. As borings go, this is still of a very trivial depth, and although, as is not uncommon, all did not go smoothly during work, there is no reason with the experience gained that another hundred or more feet should not be sunk without much trouble. Thers is nothing to be alarmed at in the Chemical Examiner's analysis. That officer is bound, in accordance with the phraseology of the laboratory, to state that such and such water is "suspicious" or "bad" if it have above a definite amount of free ammonia, but, as he points out in his remarks, free ammonia to what would otherwise be an alarming amount is common enough with artesian waters. It is only by a sanitary survey that the actual facts of the case can be determined, and no reason against the water has been ascertained under this head. One of the most common causes of free ammonia in artesian waters is the action of the ferruginous soil upon nitrates or by the tube-lining. The Deputy Sanitary Commissioner's suggestion as to pumping would in all probability settle the question as to the effect of the lining or whether the more permanent cause of ferruginous soil be the reason. The people of Cochin may drink the artesian well water with the assurance that no harm would result.

3. Undersigned can but view with regret the report that, notwithstanding the facts as to causation of elephantiasis were explained to the council ten years back, no effort to meet the simple requirement of using water protected by any of the expedients suggested had been adopted.

FORT ST. GEORGE,
2*nd December* 1896.

(Signed) W. G. KING, Surgeon-Major,
Sanitary Commissioner for Madras.

Endt. on Cur. No. 382-M.

Forwarded to the Chairman, Municipal Council, Cochin.

CALICUT,
14*th December* 1896. (Signed) G. W. DANCE,
Ag. Collector.

From M.R.Ry. M. SRINIVASA ROW Avargal, Chairman, Municipal Connoil, Cochin, to the Secretary to Government, Local and Municipal Department (through the Revenue Divisional officer), dated 9th April 1897, No. 84.

I have the honour to forward the Sanitary Commissioner's notes of his late inspection of the Cochin Municipality, with remarks thereon, which have been approved of by the council at its meeting held on the 6th ultimo.

Cur. No. 154-M.

Submitted.

10*th April* 1897. (Signed) M. SRINIVASA ROW,
Chairman.

Endt. on Cur. No. 154-M.

Forwarded.

CALICUT,
22*nd April* 1897. (Signed) H. O'D. HARDING,
Ag. Collector.

ORDER—No. 1793 M., dated 17th August 1897.

Recorded, with the following remarks :—

(1) In the present state of the Provincial finances, the Government is unable to promise any help for improving the drainage and water-supply of the town.

(2) As regards the improvement of the water-supply, the attention of the municipal council is drawn to the remarks of the Sanitary Commissioner in paragraphs 2 and 3 of his endorsement.

(3) The special report regarding the extension of the private scavenging service, promised by the Chairman, will be awaited.

(4) The Sanitary Commissioner's attention is drawn to the council's remark on the latter portion of paragraph 5 (*c*) of the inspection notes.

(5) The council's decision in the matter of closing the objectionable Mappilla burial-ground should be reported to Government.

(True Extract.)

Secretary to Government.

To the Chairman, Municipal Council, Cochin.
„ Collector of Malabar.
„ Sanitary Board.
„ Sanitary Commissioner.
„ Sanitary Engineer.

Exd. A. Raitt.

No. 1793 M., MAY 1897.

GOVERNMENT OF MADRAS.

LOCAL AND MUNICIPAL DEPARTMENT.

READ—the following papers :—

Inspection Notes of the Inspector of Vaccination and Deputy Sanitary Commissioner for Madras.

MALABAR DISTRICT.

COCHIN MUNICIPALITY.

Inspected 24th and 25th September 1896.

Population as per census of { 1881 15,698
1891 17,601

Inspection Notes.	Chairman's Remarks.
Cochin is situated on a ridge of sand between the sea and a back-water, and is but little above sea level. The depth of sub-soil water varies from two to five feet. A town situated on such a site should exercise the very greatest care on conservancy so that the soil may be kept in a state of purity, otherwise it must pay the penalty of a high death-rate as is the case here.	Noted.
2. *Roads.*—The roads are in very fair order and clean. Many of the lanes are, however, used for purposes of nature. The attention of the police should be called to this.	Will call the attention of the police to this again.
3. *Dwellings.*—Some improvement has been effected in respect to overcrowding at Kalvetti by the removal of some houses near Messrs. Volkhart's works, but much still remains to be done in this direction. Many of the houses are built on land reclaimed from the swamp and are in consequence damp and unhealthy. Building in such situations should not be allowed in future until at least efficient sub-soil drainage is first arranged for.	No dwelling houses have been erected on the ground reclaimed by the municipality. The remarks evidently refer to reclamation made by private individuals. The suggestion will be attended to.
4. *Drainage*—(*a*) There are the usual side channels to carry off rain water, but nothing beyond this in the way of endeavouring to lower the level of the sub-soil water.	Noted.

Inspection Notes.

(*b*) *Sewage Removal.*—In several streets attempts have been made to convey away the sewage by means of built drains, but so badly constructed and levelled are they that the contents of several never reach the outlet, but soak into the soil to the sure pollution of the water-supply. The old fort ditch and the Kalvetti swamp canal serve to receive most of the drainage of both British and Native Cochin, and as the upper reaches are very little affected by the tide, their condition is very offensive. It would be a great sanitary improvement if these stagnant canals could be filled up—in their upper reaches at any rate—and I would suggest that the opinion of an expert be obtained on this point.

Chairman's Remarks.

A scheme for the improvement of the drains is still pending for want of funds to carry it out.

5. *Conservancy.*—(*a*) There are twenty square-shaped, iron dust-bins. These are emptied by means of three carts and twenty wheel-barrows. These latter do not appear to have been provided with wire frames as recommended by the Sanitary Commissioner last year, nor have any steps been taken to obtain an incinerator for the destruction of rubbish. The councillors might with advantage inspect the incinerator now almost completed in Calicut and invest in a similar one for their town.

The council will endeavour to carry out this suggestion.

Wire frames on wheel-barrows do not prove serviceable when conveying earth, mud and débris, &c.

It is intended to set up an incinerator, and the Civil Surgeon will be requested to select a spot.

(*b*) *Night-soil Conservancy.*—There are thirteen public latrines and two more are about to be erected in the dhobies' village. The latrine near the police lines is in very bad order and is evidently not large enough, as the ground around it was freely used also. This latrine requires to be opened up and enlarged; at present it is not properly ventilated. The latrines on the backwater are still in the same neglected state as referred to in last inspection notes, and the approach was so bad that it was with difficulty that I managed to reach them. This should be attended to at once. The total number of latrines is still too small. The two latrines over the Kalvetti canal have not yet been removed, though this was promised in last inspection notes. The night-soil is removed by means of two iron carts and five buckets on wheels (*a*) to the beach where it is buried, and (*b*) to the sea where it is discharged in mid-channel during the ebb of the tide. Nothing is realized by the sale of either rubbish or night-soil.

The improvements to the latrines will be carried out as early as possible.

The two latrines over the canal have since been removed.

Please see para 4(c) of the last inspection notes. Flag B.

1793

Inspection Notes.	Chairman's Remarks.
(c) *Private Scavenging.*—The number of privies cleaned by the municipality has risen from 277 to 280 since last inspection. I would suggest that a sanitary census be taken and a report submitted of how many backyards and parambas are used for purposes of nature, for it is impossible to believe that out of 2,570 houses only 280 require the attention of the scavengers. In last notes it was remarked that "this will be attended to," but nothing appears to have resulted. The type of private latrine used by many in the parambas is a very poor affair, consisting of a kerosine-oil tin with a board laid across it.	A special report will be submitted on the present extent of the town conservancy and of any possible means of extending the service on the self-supporting system laid down by Government.
6. *Water-supply.*—The water-supply question is in the same stage as before and nothing has been done to cover the wells as recommended by the Sanitary Commissioner in his last inspection notes. Unless this is done and the small tanks that are found in every paramba are done away with, it is manifest that "Cochin leg" will continue to afflict the people. I would suggest that some arrangements be made for a combined water-supply for the three towns of British and Native Cochin and Ernacolam from the hills behind the latter. If this is impracticable, then the only alternatives appear to be Surgeon-General Cornish's scheme of an underground reservoir to contain the rain water collected from the tiled roofs of the old Dutch houses, or the opening up of the abandoned artesian well. As pointed out by the Sanitary Commissioner, the former of these schemes is perfectly feasible and would insure a certain supply of water, as it appears that the monsoon has never been known to fail. The other plan proposed by the Sanitary Engineer is to construct a well 20 feet deep round the pipe of the artesian boring, which, being cut off at that depth, would deliver the water with a head of that height, as the water now stands in the pipe at the level of the ground. From this well the water could be delivered by pumping into a cistern from which the people could draw by means of taps. The only thing against this is that the water has been pronounced bad by the Chemical Examiner; it might, however, be worth while to try the effect of pumping for a time and to have another analysis after this on the chance that the water is probably a great deal better than any now obtainable in Cochin, and that it is at any	As the remark stands, the council is unable to see how this arrangement is objectionable. No material improvement can be expected in the direction unless the Government is prepared to help the municipality with the necessary funds in the way of loan or gift.

Inspection Notes.	Chairman's Remarks.
rate free from the chance of contamination by mosquitoes—*vide* last inspection notes, paragraph 5 (*e*), for connection of mosquitoes with Cochin leg.	
The well near the police lines is in a very bad state; it should be lined with cement, it should be covered and supplied with a pump, and have a platform made round it to prevent percolation direct into it as at present. Those who can afford to pay for water are supplied by boat from the Alwaye river. The details of this are left largely to the boatmen, so that it is extremely doubtful if the water supplied really comes from the appointed spot. On arrival at Cochin the barrels are thrown overboard and floated ashore. It is evident that in this way the water cannot be so pure as it might be, and I should advise that some check be placed on the boatmen so as to ensure that they really go to the best place for their supply, and that on arrival the barrels of water be not thrown into the backwater but brought alongside so that their contents may be pumped direct into an iron tank from which the customers might draw their supply.	The well will be cemented as suggested.
7. *Markets.*—(*a*) A new fish market is being made at Kalvetti; when this is finished, the old one will be closed.	All these suggestions will be attended to.
(*b*) Amaravati fish market consists of a central shed with earthen floor. The sellers sit outside this and sell their fish on filthy mats. The shed should be cemented and the fish exposed on slab tables or cemented platforms; a good water-supply is also requisite.	These suggestions will be carried out.
(*c*) Town fish market is a square shed with laterite jelly floor; there is no drainage nor facilities for washing.	These suggestions will be carried out.
(*d*) The beef bazaar is a row of godowns with laterite floors and having a thatched verandah in front. The meat is sold on wooden tables; slabs of polished stone ought to be substituted.	The floor will be cemented.
(*e*) A new mutton market has been built since last inspection. It has a cemented floor, but seems to be too small for its purpose. In a small town like Cochin one central market ought to be erected, as it would meet the wants of all and be more easy to supervise than the scattered ones at present existing.	The improvements suggested will be considered after the water-supply and drainage difficulties are surmounted.
8. *Slaughter-houses.*—There are seven private slaughter places—for they can hardly be called houses—all in a most	

Inspection Notes.

undesirable state. As, however, a new municipal slaughter-house is to be built this year, there is no need to describe them.

9. *Graveyards.*—There are nine burial-grounds within municipal limits. The Mappilla ground is in a very bad state, overgrown with vegetation and in a crowded locality. It should be closed and a new one provided near the beach south of the town.

Chairman's Remarks.

This matter will be considered at an early date. The difficulty is to find a suitable piece of ground for a new cemetery.

10. *Vaccination.*—Of 95 children examined in the schools, 77 were found to be protected, 12 had suffered from small-pox, and 6 were unprotected. One first-class vaccinator, K. Manivakku, on Rs. 15, is employed. The following shows the results obtained for the last five years :—

—	1892.	1893.	1894.	1895.	1896 up to end of September.
Number vaccinated	1,651	1,108	1,260	1,168	906
,, ,, successfully	1,514	1,050	1,186	1,033	789
,, ,, under one year	216	188	279	384	302
,, verified by inspecting officer	160	144	105	80	83
Births	559	573	605	655	* 459

* Up to end of August 1896.

It will be seen that very few of the cases are inspected. I verified 21 cases from the register and found 15 successful, 3 unsuccessful and 3 absent. The lymph is got from Madras and, as might be expected, is prone to deteriorate in transit, giving a large number of unsuccessful insertions. Cochin is notorious as being the municipality showing the highest death-rate from small-pox in the Presidency during the last ten years—*vide* diagram in Report on Vaccination for 1895–96.

The vaccination work has since been placed under the direct supervision and control of the Civil Surgeon, and it is hoped that satisfactory results will follow.

The following shows the result of the working of G.O., No. 1502 M., dated 19th October 1894 :—

Total births during preceding six months, *i.e.*, from 1st July to 31st December 1895.	Number vaccinated.		Number vaccinated a second time because first operation proved unsuccessful.		Postponed under medical certificate at the end of six months.	Number died.	Number left the town.	Number unaccounted for.	Ratio per cent. of successful vaccinations to total births.
	Successfully in the first instance.	Unsuccessfully in the first instance.	Successfully.	Unsuccessfully.					
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11. *Registration.*—One registrar on Rs. 17–8–0 is employed. The books are kept in English. The sanitary inspectors bring information. People do not readily

Inspection Notes.	Chairman's Remarks.
come to the office to give information; they might now be prosecuted for this. No prosecutions for failure to register have been instituted during the year. The following shows results obtained :—	Noted.

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Fevers	47	59	57	69	48
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Other causes	363	291	333	348	239
Total ..	850	507	682	464	483
Death-rate per mille ..	48·3	28·8	38·7	26·4	41·1
Births	559	573	605	655	459
Birth-rate per mille ..	31·8	32·5	34·4	37·2	39·1

FORT ST. GEORGE,
16*th November* 1896.

(Signed) W. B. BANNERMAN, Surgn.-Major,
Inspr. of Vacen. & Dy. Sany. Commr., Madras.

No. 2254-S.

Forwarded to the Chairman, Municipal Council, Cochin (through the Collector of Malabar).

2. The Deputy Sanitary Commissioner calls attention to the suggestion of the Sanitary Engineer as to the future disposal of the artesian boring. Undersigned would strongly urge its acceptance by the council. He also believes that it would be advisable for the council to take advantage of the permission accorded by Government to the effect that the council might continue the boring, did they so elect, at their own expense. As borings go, this is still of a very trivial depth, and although, as is not uncommon, all did not go smoothly during work, there is no reason with the experience gained that another hundred or more feet should not be sunk without much trouble. There is nothing to be alarmed at in the Chemical Examiner's analysis. That officer is bound, in accordance with the phraseology of the laboratory, to state that such and such water is "suspicious" or "bad" if it have above a definite amount of free ammonia, but, as he points out in his remarks, free ammonia to what would otherwise be an alarming amount is common enough with artesian waters. It is only by a sanitary survey that the actual facts of the case can be determined, and no reason against the water has been ascertained under this head. One of the most common causes of free ammonia in artesian waters is the action of the ferruginous soil upon nitrates or by the tube-lining. The Deputy Sanitary Commissioner's suggestion as to pumping would in all probability settle the question as to the effect of the lining or whether the more permanent cause of ferruginous soil be the reason. The people of Cochin may drink the artesian well water with the assurance that no harm would result.

3. Undersigned can but view with regret the report that, notwithstanding the facts as to causation of elephantiasis were explained to the council ten years back, no effort to meet the simple requirement of using water protected by any of the expedients suggested had been adopted.

FORT ST. GEORGE,
2*nd December* 1896.

(Signed) W. G. KING, Surgeon-Major,
Sanitary Commissioner for Madras.

Endt. on Cur. No. 382-M.

Forwarded to the Chairman, Municipal Council, Cochin.

(Signed) G. W. DANCE,
Ag. Collector.

CALICUT,
14*th December* 1896.

From M.R.Ry. M. SRINIVASA ROW Avargal, Chairman, Municipal Council, Cochin, to the Secretary to Government, Local and Municipal Department (through the Revenue Divisional officer), dated 9th April 1897, No. 84.

I have the honour to forward the Sanitary Commissioner's notes of his late inspection of the Cochin Municipality, with remarks thereon, which have been approved of by the council at its meeting held on the 6th ultimo.

Cur. No. 154-M.

Submitted.

(Signed) M. SRINIVASA ROW.

10*th April* 1897.

Endt. on Cur. No. 154-M.

Forwarded.

(Signed) H. O'D. HARDING,
Ag. Collector.

CALICUT,
22*nd April* 1897.

1139 n 96
1026 n 96
976 n 96
912 n 96
65 n 96
93 n 95
1509 n 96
960 n 95
1502 n 96
1216 n 98
1275 n 98

LOCAL AND MUNICIPAL DEPARTMENT.

[5]
700—6-4-96.

Papers to be read in Proceedings:—

Again G.O., dated 189 , No.

Current No 17412 of 1897, dated 9th April from the Chairman M. C. Cochin.

Current No. of 189 , dated from the

P.S.
Order. No 1793 M., d 17.8.97.

Recorded with the following remarks:-

(1) In the present state of the Provincial finances, the Govern-ment is unable to promise any help for improving the drainage and water-supply of the town.

(2.) As regards the improve-ment of the water-supply, the attention of the Municipal Council is drawn to the re-marks of the Sanitary Commissioner in paras 2 & 3 of his endorsement.

(3) The special report regarding the extension of the private scaveng-ing service, promised by the Chairman will be awaited.

(4) The Sanitary Commissioner's attention is drawn to the 2nd.

Dear
Please put up the year's Budget P.P. Has any estimate been made of the cost of any of the water-supply schemes: & can the Mly afford to raise a loan in the market?
D.R. 1/6/97

Please see separate note put up - I.R. 7/11/97

Office
To verify clause (3) before despatch.

the Council's remark on the latter portion of para 5(c) of the Inspection notes.

(5). The Council's decision in the matter of closing the ~ objectionable mappila burial ground should be reported to Government.

V.R
3/6/97

To the Chairman M.C. Cochin.
.. .. Collector of Malabar.
.. .. Sanitary Commissioner
.. .. Sanitary Engineer
.. .. Sanitary Board
~~Editor Table~~.

Dept.
Please see the note in favour against clause (5) of the order.

[L & M. 300—3-12-26.]

1798 Misc 17-8-97

NOTE FOR THE Secretary.

(1) Please see G.O. No 290 M dated 25th February 1897 put up: (Flag C.)

(2) In par. 6 of his inspection notes, the Deputy Sanitary Commissioner refers to three schemes for the water-supply of Cochin viz:

(a) A combined water-supply for the three towns of British and Native Cochin and Ernaculam from the hills behind the latter;

(b.) Surgeon-General Cornish's scheme of an underground reservoir to contain the rain water collected from the tiled roofs of the old Dutch houses; and

(c). The opening up of the abandoned Artesian well.

In the appendix to the Sanitary Engineer's letter printed in G.O No 65 M dated 11th January 1896 - (Flag D-), the approximate cost of the first scheme is given as Rs 7,95,750; but owing to its prohibitive cost, this scheme has been considered impracticable: vide par. 3. of G.O. No 65. M. dated 11th January 1896 - (Flag E-.) In the case of the second scheme, no estimate of the cost.

cost appears to have been made, but a similar scheme of collecting and storing rain-water proposed by Dr. Laing, was estimated to cost Rs 764,000, for five gallons a head a day: Vide paras. 11 to 14 of the Sanitary Engineer's letter printed in G.O. No 293 M dated 15th February 1892: (Flag F). As regards the third scheme above referred to, it was estimated that it would cost another Rs 5,000, to continue the boring to a depth of 400 feet, beyond which the plant, those existing, would not be effective (Vide par. 1. of G.O. No 65. M. dated 11th January 1896 (Flag E.)), but the Council was not able to find this sum and therefore the experiment had to be given up. Please see the Chairman's letter in G.O. No 392. M. dated 7th March 1896 (Flag. G.)

(3) In the case of the joint scheme above referred to, the Sanitary Engineer, on the supposition that the Cochin Government will contribute its share of the cost, puts down Rs 401,540 as the Municipal Council's share: Vide the Appendix to the Sanitary Engineer's letter printed in G.O. No 65. M. dated 11th January 1896 (Flag D.) If this sum is raised in the open market at the rate of 6% interest, payable in 50 years, the annuity

annuity which will liquidate principal and interest will amount to Rs. 25472. This together with the working charges of Rs 5,500 will be Rs 30,972. Assuming that the cost of the second scheme will be nearly the same as that of Dr. Laing's (Rs 764,000), the annual additional expenditure will be still higher (to the Municipality) The third scheme may be left out of consideration altogether as its success is very doubtful. The approximate additional revenue that can be expected if the taxes are levied at the maximum rates provided in the Amending Act is only Rs 10,230, as shown below:—

	Rs.
By extending the tax on Arts to the last clap.	× 400.
By raising the rate of taxes on buildings and lands from 7½ to 8½ p.c.	⊗ 1,090
By levying Water-tax at 8 per cent.	⊗ 8,720
By levying the tax on Carts at the maximum rates	⊗ 20
Total Rs.	10,230.

Of this sum however the increase of Rs. 400 under the tax on arts is very doubtful as the adoption of the schedule as revised by the Amending Act III of 1897 is expected to result in a decrease

P.T.O.

× An approximate figure.

⊗ Based on the actuals for 1895-96.

⊗ The net current demand @ 7½ p.c. for 1895-96 was Rs. 8147

[L & M. 300—3-12-96.]

~~NOTE FOR THE~~

decrease under this head
in several Municipalities

V.R.
19/7/97

I see it is evident the
Mily Dept must afford any
of the schemes without the
assistance of for[c]. The
draft may now issue

S.H.

t copy sent to Press. 19-8-97

urned for signature. 31-8-97

pa[illegible]hed in print. 4/9/97

Number of copies required: Order complete. 50 / Letter only. / Order complete with Letter.

9

t.

D AGAIN G.O., No. 189 DATED

RENT No. 1741 Mn already in type

EDRE OF GOVERNMENT

ITE[illegible] GOVERNMENT.

STATEMENT WITH DITTO.

TES NOT FILLED UP BEING MEANT FOR DESPATCH IN ORIGINAL.

N.B.—
A = Print in full.
B = Not to be printed.
P = Print abstract only.
Q = Print heading only.